

# HOME COMPUTING WEEKLY

AN ARGUS SPECIALIST PUBLICATION

July 14-22 1988 No. 121 5pp

C16/64  
**TIME SLIP**  
Don't buy another C16 game until you see TIME SLIP!

**Under review**



**6 pages of software p.12**

**Bust a Ghost!**



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## Sinclair to risk reliability test?

Choosing a reliable home computer could soon be less of a gamble if an innovative idea from Sinclair is taken up by all the major manufacturers, across Britain's Isle.

Up till now, no independently assessed figures of buildy errors have been available to the home user. The buyer has been confused by claims from manufacturers and others from retailers that often conflict.

The latest example is a survey by a computer trade newspaper of a small number of retailers, in different parts, rates of popular home computers.

The survey concluded that the percentage of Sinclair Spectrum returned was 30.8 per cent compared with Sinclair's own estimate of "around 12.15 per cent".

Sinclair, and other manufacturers accused in the survey, dispute the findings in unambiguous findings.

Computer companies are becoming concerned by the lack of reliable figures and the effect on confidence in the industry, as Sinclair has made the first move towards resolving the confusion.

A briefing was held recently David Chess, a managing director of Sinclair and representative of the newspaper to discuss ways of producing more reliable return figures.

One proposal aimed at the meeting was to include a complaint card with a substantial number of Spectrum Pluses. One fault would be returned to Sinclair if a fault was found, the other would be sent to the newspaper.

A spokesman for Sinclair said the measure could also be to "lay the problem of monitoring computer returns in one place and for all".

All manufacturers are already doing planning cards and the complaints cards are only one of a number of ideas put forward.

In some of the stages the Sinclair, at least, will participate in a joint monitoring scheme with an independent association. It should be emphasised however that if the complaint card system goes the go-ahead it will only be a monitoring system - the newspaper concerned will not be taking up individual cases with the manufacturers and the speed of repair will not necessarily be shortened.

Hopefully a more accurate method of assessing return rates can stop the building over the true figures, and leave the companies to concentrate on tightening up quality control. Reliability is used by some companies as a selling point but, at present, for too many manufacturers the very notion of the word problems a shoulder of pain.



David Chess - Sinclair's MD

## New bill - Old Bill

Let the parties know - the Copyright (Computer Software) Amendment Bill is now on and software piracy and theft are illegal.

Software thieves are not just limited to the possibility of a prison sentence, the measure also that can be imposed for copying a single byte of data.

The Bill passed through parliament with virtually no opposition and can be considered a triumph for the Software Against Software Theft (SAST) movement a year ago's campaign for change in the law regarding bootlegged software.

To make the new law work, SAST have approached an International Confederation to collect evidence of software of copyright. The man

chosen to support the parties is Robert Hill, a former Chief Superintendent in the Metropolitan Police who retired last month after over 20 years' service.

My role is to collect evidence against suspected software thieves and build up a case based on their who are known aspects", said Robert. "I have to clear indications of proof I will bring to the notice of the company whose product has been copied."

"The document runs with them is to whether they had the money in the police, taking standards officers or immigration officers."

The International Confederation does not have the power to initiate a prosecution unless a software company has authorised him to take appropriate action on their behalf.



# WATCH OUT! IT'S



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# HOME COMPUTING WEEKLY

July 16-July 22, 1985 No. 121



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## Scoopbox

Summer is swimming and the days are getting warmer. I would say longer but it's a little late for that!

Then in the time of year when the software houses bring out all their summer game packages and we see 400 millionaires huddle and 79 a-side football teams go the small and digital route.

There is a danger here though. Summer in this country doesn't last too long and I can imagine the few days being spent in front of a computer removed of art in the vitamin D producing sunshine.

I have a hankie to push my son off his machine and while I have sympathy for the computer addict, I can't don't think that it is healthy. Sunshine and social contacts need time and riding in front of a VDU screen doesn't help either.

So pick up your PCW, get out the deck chair and read it in the sun. If that's impossible, compare with a friend and make this a social rather than an individual hobby! Dave

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## Coming soon

- The second in our Time Capsule series from Janet Lacey
- Beginning machine code for the Spectrum
- Give Clifford continuous Music and the Maze
- Fun — tests, reviews, and competitions!

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NICK FALDO  
PLAYS THE

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*Nick Faldo*



# SPOOKY BUSINESS

Capture a Ghostbusters cassette in our latest brain chilling competition.

**T**here's a chance to get a piece of your marketing mix right by creating our competition list using a straightforward, easy process.

The *Glennbeaters* computer game, launched at Christmas, is still in the bestselling software charts and 100 HCW readers have the opportunity to qualify the "Mikromania Man" to get "dosed" if they are a winner in our £1,000 contest.

**ADDITIONAL** computer versions of the film show some thousands of Americans searching for terrorists in their frigates, follows the movie's plot closely and includes all the ghoulish subterranean confusion on the big screen.

The nation's sales plans on the waters of New York which is being threatened by an invasion from the neighborhood and leads to a grand finale on the temple of Xand, in the mountains the world's Greenwater has so sharpened his species something expensive by acquiring the right genes — such as *Bovery* *Gervais*, *Image* *hannaford*, *Marshall*, *Seneca*, *Chen*, *Victims*, *Ghost*, *Traps*, *Chen* *Red* and a *Lower* *Confession* system. Tenth which is still respecting photographs would be seen, clear authors.

Of course, eye exams physicians require capital and your business plan is essential to you build up your glassware. *Chris Lee*

Now you have more information about the program. For more information, visit [www.rockwell.com](http://www.rockwell.com).

claim your very own secret number which you can use now and now play Ghostbusters. Ghostbusters is compatible with the Spectrum, Amstrad and MSX. This secret number can be used on any version of Ghostbusters 'anywhere in the world'.



Study the two letters — there are a number of differences between them. Circle the differences on cartoon B and send the drawing and envelope in an envelope. Write clearly the number of differences you found on the back of the envelope.

Put your entry to Chow-hunting. Home Computing Weekly, No.1 Golden Source, London W18 1AB. Entries close at first post on Friday 2 August 1982.

Important: please follow the guidelines on enclosing — handwritten coupons and notes on envelopes with no markings on the back cannot be considered if you are a winner, the coupon will be used as a label to notify your prize so clear writing is essential!

[illegible]

- **Minors**, will not be accepted from employees of Associated Airline Operations (AAO), except under extremely rare circumstances.
- **There are no minimum age requirements** for the course.
- **The course is a classroom** in itself and not an on-the-job training course.

### Activation Ghostbusters Competition

1000

100

[illegible]

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Complete slowly and fully. If you stop to grip the trigger and breathe you will lose total flow to the submachine gun. Complete the stroke continuously, smoothly, etc. If you stop

China's new leader, Hu Jintao, said that the country will continue to support the UN's efforts to bring about a peaceful settlement of the conflict, and that the number of differences are being solved on the



### Glass job

Microsoft 800, Modem 8000 and Tandem have announced a new initiative in the home video communications market.

Modems for leading home videos will be sold with a free three month subscription to Microsoft worth £10.

Microsoft's marketing manager, Ian Black, said "While our new range of communications hardware about to appear on Microsoft — Microsoft Chat, Ion, the Gallery and Jetstream — a free three month subscription will help more video users benefit from the convenience and enjoyment of computer communications."

Microsoft's new Jetstream service will feature 30 vacancies every Monday on the fields of engineering, computing and education for appointments. Microsoft users will be able to search through the vacancies in Microsoft and apply immediately via electronic mail.

Microsoft 800, 8 Herbol Hill, London EC1

### Past and Present unite

The wonders of ancient Italy will be brought to life with the help of Civetto who is supplying 100,000 words of hard and software in a Cambridge led team of archaeologists.

The excavations are already under way in the medieval town of Ravenna and the programme of the dig will be spread and amplified by Civetto's data banks and data wheel pointers.

One of the team leaders, Susan Scoddard, is obviously convinced that modern technology plays an essential role in the rediscovery of past cultures. "A computerised database is necessary if effective analysis of such vast amounts of data is to be possible."

British Civetto, PO Box 89 46 Upper Richmond Rd London SW15 8JL

### Dragonfire for the Amstrad

Horace Cooksons, who this year celebrates five years in the home software business, is bringing out a range of ten programs in the Amstrad format by the Amstrad division of Dragonfire.

Interest in the increased software market is high but as yet we don't have a definite release date, just that it will be around the mid-August mark.

Another interesting release will be Southern Belle for the Amstrad, the first real-time action engine simulator based on the famous London of Victorian era.

Griffith's Day One is to be supported with Persim for the C64 and Amstrad. Close to it is Dragonfire's signature simulator — both are expected to appear in early September.

Horace Cooksons, 308 Abchurch Lane, London, EC4N 3DF, Oxford OX1 4BE.

### On Your Screens

The UK software house CRL has now entered the home computer peripheral market with its Video Display Module for the C64.

The display allows video signals from any source to be displayed on screen, stored to

disc, processed and printed out. It is compatible with video recorders, surveillance cameras and even weather satellite reports. Once a picture is displayed, an image is produced on screen in four shades of grey useful for satellite processing and the richness of a light pen allows interpretation and can't

only programs. It is a sophisticated model, priced at £149.95.

We would like to apologise to CRL and Silverhill for the typographical error which defined them "CRL" as 140W when 120.

CRL Hse, 9 Kings Way, Capenhurst Rd, London SW3 2HD.



Tom Curry digitised on a C64

A new co-operative venture by two specialist software houses means that you too can be a software supplier.

M C Lockhart and A W P Salmons are organising the launch of games under a new label in the Autumn and are on the look out for mid-range up to commercial standard.

If you have that arcade game that's solidly made, good, a graphic adventure with work or even an, as yet, unexplored idea of the inner workings of the domestic firm and is along to share in the adventure below.

They will make an offer for any information that they accept and once you could be making receipt of your software in M.C.W.

M C Lockhart, 110 Park Lane, Farnham, Dorset SP12 6AL  
A W P Software, Unit 6, Canal Way, 1st Flr, Wincoburn St East, Farnham, Dorset SP12 6AL

## Computer Quiz Finals

TV's Michael Redd is to be question master at the grand finale of the British Computer Society/Commodore Schools computer Quiz which will be held at the University of Reading on the 11th Feb.

From the original five hundred teams, eight are now preparing to battle it out for the top prize of £1000 worth of Commodore computer and peripheral equipment and a second prize of £500 of Commodore goodies.

To tie in with the quiz, Commodore has developed a quiz scheme whereby the schools involved can purchase the computer in half the normal price just after the quiz period is over.

The quiz is becoming increasingly successful and Derek Harding of the BCS is enthusiastic about its future. "With Commodore's help it has now become a major national event bringing the world of computers closer to young people."

BCS, 15 Mansfield St, London W1M 0AE

Commodore UK, 1 Hunter Way, Welton, Cusby, Northants

## A world first for Sinclair

Sinclair Research has upheld the tradition of the Great British invention by producing the world's first commercial water waste integrated circuit (WIS).

Meanwhile, Sinclair's research centre in Cambridge, has managed to come first in the race to produce a cost effective water by making the printed circuit board (PCB) redundant and using switching contacts on the water itself.

The previous solution, working with four-inch wafers, was to slice the silicon to separate the reject from the working chips. With Sinclair's WIS they are rejected by electronic logic.

Although this method of "condemned logic" was patented in 1979, by Intel Corp, it has taken until now to effectively translate it for mass production.

It is seen as a major step forward in semiconductor mass processing and should radically reduce both cost and cost.

For Clive Sinclair, founder and chairman, one of the new logical developments is "increasingly complex electronic components" and of immediate importance "in computer electronics, industrial, medical and defence markets."

## Coming up trumps

Sharp-eyed readers of HCW may have noticed the software on a disk, first reported in HCW 228, on TV.

Michael Hall of Electronic Software showed the cards on Database. He claimed that the new cards will be the end of software piracy which currently causes the industry to miss problems.

The card has a 256 Kbit capacity (256 bytes) but a number version is currently under development. He suggested that applications include: student shopping, typewriting, banking, security, games software and many others.

A first price is now emerging for the cards. Electronic believe that they will be sold at £14.95 (usually) but that this should fall to around £9.95 within the next six months.

Electronic Software, 91 High St, Cambridge, Cambridge CB4 3JL



My Mylind Fletcher working his CHAD from Ashford's Air Stage

## Tunnel Vision

Stephen Hand-Fletcher, a London sub-director, can now recognise his presence for smoking things up without endangering innocent motorists.

Stephen was the lucky winner of Ashford's monthly computer prize and he can now keep things off his 5000cc nerves.

In his hour's delight Ashford is an dealer pleased to have made London a safer place to live in and 15-hour a week computer addict, Stephen, is also wearing the goggles "It's gross therapy after riding between Watford and Aldgate for eight hours."

Ashford's Stephen's New, Palace St, London SW1

Macmillan will be launching a quiz for the Spectrum and C64 based on ITV's highly successful children's quiz programme, Quiz and Quiz, scheduled to return to the screen in September.

These delightful paper characters proved so popular last year that they went on the National Top 100 with a viewing audience of over five million.

The well-known voice of Richard Brown, started with the packaging Quiz and Quiz obviously captured the imagination of both children and parents alike.

No doubt Macmillan are hoping for a similar response when their computer version is released later this year.

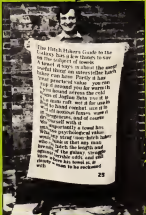


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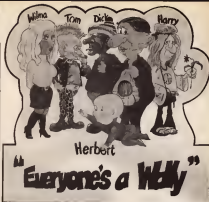
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# IT'S WALLY WEEK



**In this first interview of a new regular series we talk to Wally Week, superstar of Pyjamarama, Automania, Everyone's a Wally and Herbert's Dummy Run**

**T**here can be few men who have (yet) so many titles as quickly as the infamous Wally Week. The leap from inaudible obscurity to complete superstardom was nothing for a man as skilled as he.

It was with great anticipation therefore that we at HCW approached his management, Mike-Che Deeds Incorporated, in an effort to persuade him to launch our new series Time Capsule.

In this new and regular series we will interview famous names within the home computer industry and ask them to expose the products that they believe should be promoted far more than our current computer age. We will then pack these products into an imaginary time capsule and bury them underneath the statue of him in the center of Playfully Games — out of the office door (see left) and with 250 steps guarding all traffic and

you're there! — where they will remain until another age can be so given them again.

Over the next weeks and months there will be personalities from all parts of the industry surrounding you with their life stories and their reflections but for now we had better return to Mr. Week who we can now try to get three chairs to come up on a parking meter.

Wally Week was born of humble parents in a small town called Walsford in distant Scotland. His childhood has been a major influence on his entire life and has been described by his biographer as "simple, and when I say simple I mean simple." Wally has always remembered these early years and a tear will often drip from his eye when he hears people describe him in this manner.

He lived in a small mother's cottage with a thatched roof, which, when the family were depressed,

used to be ignited in the simple hearth. It seems that the rain dripped in but they at least had a fire to try to dry their clothes.

Wally was born at a very early age on Monday 1 June 1952, just eight days after the Editor but that is another simple story. As Wally developed, over a period of days, years and months, his parents became aware of his unique talents.

As a teenager, Wally was the first person in the family to be so named a Wally. He kept these words suppressed heavily until the age of 18 for several years but then discovered that they didn't go well after all and his first business closed with what Wally describes as "only minor success".

His next venture was much more adventurous and involved a great deal of study and thought. Wally became the proud founder of Scotland's first Dinky toy repair facility. This venture was so successful that Wally managed to collect a full size kit, super technology kit, and complete experience in vehicle repair. This business only closed when Wally ran out of spare parts, a tragic occurrence for all concerned.

Wally was so depressed in the failure of this venture that he

decided to keep his nose head and cross Hedman's Wall to find fame and fortune.

His first job south of the border was as a car mechanic for Auto Cross in Borekall. He wrote his own references and mentioned his own experience repairing Rolls Royce, Jaguar, Mercedes Benz and a number of other makes of motor vehicle. With this type of background, how could the garage resist a man of his caliber?

You are likely to know the rest of the story. Wally had a terrible problem. He just couldn't get up in the morning and the difficulty meant he got the sack, but by then he was already on his way to London.

Most people would have solved their early morning problems with the purchase of an alarm clock but not our Wally. He decided that he needed a wife and that this would aid all his difficulties. He married Wilma who he met while working for him, a Morris Minor. Wally gave it all his love, care and attention and the vehicle was returned to Wilma in a large cardboard box.

But become engaged. They had heard about the marriage services that take place in Wally's native land and pledged their troth over an ice cream cart in London Scotland.

It was at this point that Wally decided to sort out his life and asked Wilma to help. The first problem was that "due to

emigration and they started up as building contractors. They looked for maintenance work and soon found that there was more than they could cope with.

It was at this time that Wally met his new friends Tom, Dick and Henry. Work flooded in. It wasn't so much the quality of work that led to this popularity as the fact that no one ever paid for their work. Wally assumed that this was due to "staffing difficulties".

During the time Herbert led a very upward trajectory. There was never anyone to discipline him and he ended up getting in everyone's way. One of the games that Herbert used to play was hide and seek. The way that he did this was usually led to his becoming lost in a local department store. Wally and Wilma eventually found him but only after a hard day's slog.

We were lucky to be able to interview Wally at all as the entire West family are currently on a continental holiday. We arranged this interview by phone and Wally agreed to pay his own day return fare to speak, exclusively, to Home Computing Weekly.

We first asked Wally which piece of computer hardware he felt was the most impressive over the years that he has watched the computer industry. "I think that would have to be the Jupiter Ace. It has to be a good and clever computer because even I couldn't understand it after reading every book on BASIC that I could find."

The interview soon has entered the entire West family for years and their chance for prominence at The Great Space Race from Lagan. "This is a truly astounding package as far as we Works are concerned. We had hours of fun just trying to find anything worthwhile in the box. We never even got to playing the game."

Wally admits that he has very few computer accessories, he tries to keep things as simple as possible. He did however succumb to buying a disc drive for his C64. "I was fed up with all these tape loading programs. They never gave me any time to drink my coffee. I solved all that by buying the 1340 disc drive unit. Now I have all the time in the world."

"Although I don't have much time to read there is one series of books that should be preserved as far as I'm concerned. These are the books bought by Tim Harbott. I have typed on headsets and he is a very clever fellow. He made me see you about BASIC. I didn't know that long learning could be so much fun. I still haven't got one to work."

It was at this point that the interview was terminated due to the appearance of two large



We have heard Wally's marriage ended as the much Wally of the World. His circumstances were critically strange enough. Wally admitted to ask Wilma for a date but his request ended up as a proposal of marriage. Wilma accepted before Wally had finished talking and found that she had

circumstances beyond any control. Herbert arrived. Wally seems to be baffled as to how this happened and is still investigating the circumstances.

Being parents — "In role I take very seriously" says Wally — the Wests decided that Wally's somewhat bizarre background required more



police. It appears that when Wally left the country he named a police detective that he would not return. "The means of national security". The policeman had come to enforce that agreement and Wally was whisked away to regain his family and search for another job — abroad.

# SOFTWARE

## Exodus Ultima III

Based closely on *Dungeons and Dragons*, the action adventure shows you in the roles of humans which is represented by a host of names including Quanta, Chiriposea, Demos, Gwyn, and Ted Wincade. Before starting, the adventure credits must be performed.

The game is designed because of all the humans involved in the game, it is necessary to transfer the statistics information onto a disk of your own before you can start your first game. This does, you are ready to embark on the game proper.

One of all you must create at least four characters from the menu given at the screen. Each character has two main attributes: race and personality. Race determines the relative amount of strength, dexterity, intelligence and wisdom which each character can attain but each attribute can be allotted a certain amount of energy at the beginning of the game.

Professions describe the weapons and armor which can be used as well as whether the character can use magic or has some other specialization. The five professions are: fighter, elf, dwarf, halfling and wizard, with eleven possible professions such as wizard, cleric, druid or ranger.

With this number of options (41 variations) are virtually limitless. But 30 characters can be defined. Character definitions also allow you to specify the sex of the character as male, female or other but this has no effect on the game whatsoever. Having thought up at least four names and distributed stats according to type a party can be formed. One explains these about the menu selection screen so that it rarely presents second thoughts and once a decision is made it must be adhered to.

During the adventuring

phase, commands are given with single key presses and a comprehensive map reference sheet is provided of all the commands available. Each laser used mostly refers to the command, for example, U for unlock or X for run.

Initially you are placed naked and unarmed on the plains of Sounia, an island with water surrounding the shore. You have cloth armor, a dagger and a quantity of gold as the first task is to dress, arm and then make for the eastern town or buy more arms and provisions (staying in Sounia is a distinct possibility otherwise).

On the "surface" you may find yourself attacked by a group of monsters and the more changes to give a closer view of the battle. Each player in turn has a chance to move or attack. Movement is by keyboard control — it's a pity that this conversion does not give the joystick just into consideration. Attack can be physical combat with a weapon at close quarters or by magic in a distance. The problem with magic is that there are 12 possible spells but too tedious to tell you what they do. This is a serious omission which I hope will be corrected, just and error can only go so far.

Success in battle means a gold reward in a casket which is often looted (sapped) and must be opened with care. The gold can be used to buy weapons, armor, weapons or food in the eastern town or trade.

When all your men are killed the game ends abruptly and cannot be restarted without reloading the game from scratch.

This is an excellently conceived game which I recommend as the best action adventure available for the 64, despite my reservations that the conversion could have been better thought out.



## Alex Higgins' World of Snooker

I was quite surprised to receive Alex Higgins' World Snooker from Amstrad as they have already got one snooker game in their collection. I was even more surprised when I loaded the program and found that I was faced with the same game — well almost.

Amstrad have taken their original computer program and speed it up a little. The game follows all the rules of snooker and can be played with a choice of 4, 8, 16, or 19 red balls. A provision against is also included, the user being allowed to wander round the table potting the balls and watching phenomenal breaks (if he has).

The first difference that you will notice is the excellent picture of the Irishman himself which is displayed during loading. The second enhancement can only be taken advantage of by the more efficient amongst you. If you have purchased the Amstrad speech synthesizer, or even the 4K memory system, then you can enjoy the names and messages being called out by an Irish droll.

The operation of the program itself has also been improved. In the original game the cursor, with which you do the disposition of the shot, was represented by a flashing white dot. This was quite difficult to place accurately. In the new game the cursor is a flashing circle which is the same size as the cue ball. Finally you will find that all of the game's controls react 100% faster to your commands.

The Higgins' version of the game is a definite improvement over the original program — but I still couldn't make the balls jump off the table like he does!

A.B.

Price £8.95

Publisher: Amstrad

Address: Barnwood Way, 100 Kings Rd, Barnwood, Bourn CM14 4EP



Price £19.95 (plus post)

Publisher: US Gold

Address: Unit 16, Parkway Ind Est, Henley St, Birmingham B7 4LT

064





### The Scout Steps Out

I mean about then when I first saw the title of this program I was unsure of what to expect. Would it be a Richard Gere look-a-like or a wannabe? I was pleasantly surprised to find that the game was quite a little gem.

Before I got started on the game I must warn that you're up against your opponent in your Multi system. The little rats that play continually while the focus is on the opening screen is tough. It is played in streets with multiple views and is so tricky that should it be made into a single then it would go straight to number one.

The aim of the game is to wander round a series of ladders and level type screens collecting various objects. There include the group making tonight, flag on flag day, compasses for the camp robo, and even antelopes for the troop's tea.

All of the screens and characters are drawn in full colour and great detail. You are not required to complete each screen before going on to the next, just wander off one side of the screen and you will appear somewhere else.

The number of lives that you begin with is determined by the number of penalties that you have eaten for breakfast. There is a deficit on the opening screen but even a scout can only eat once in a life.

The Scout Steps Out is part of the most well written, different, and fun games that I have played in a long while. **J.R.**

Price: £8.95

Publisher: Amsoft

Address: Brewood Rd, 149 Kings Rd, Brewood, Essex CM14 4EP

**AMSTRAD**



## FIVE-A-SIDE FOOTBALL



### Five-a-Side

Commodore's International Soccer has long ruled the Kop as the best football simulation around but this game from Amsoft is a worthy challenger for the championship.

The opening menu offers a one or two player game of soccer or possibly competition at any of three skill levels. The pretty game I found to be quite disappointing despite the excellent graphics but the football match itself is great fun.

My complaint about the graphics relates to the way in which the ball spins in handling. The view of the penalty is from behind the ball looking towards the goal and when the ball is kicked you must move the goalkeeper in the direction the ball is travelling and press the fire button to punch the ball out. Unfortunately the spin for the ball does not switch from foreground to background priority and it is only when the message appears on the screen that you know if the ball was served or not. I found these penalties to rely more on luck than judgement and I can't honestly say that I enjoyed the rest of the game.

Really it's the football game itself by which the game will be judged and on the whole it passes this test. The first surprise is the use of Amsoft's excellent Vector Master unit to produce a superbly realistic football that just before the kick off. From the kick-off the player controls the ball is controlled by power and this is signified by him being highlighted in a darker colour than the rest of the team. He can dribble by tapping him on a collision-course for the player in possession of the ball. Alternativ-

ely, to not kick the ball with the strength of the kick being determined by the length of time the fire button is held down before being released to effect the kick.

Five-a-side is noted for being a very physical sport and the contact aspect has not been ignored in this simulation. Hard tackles will floor the opponent but too much rough play will result in a penalty kick-off from the centre spot being awarded to the victim's team.

The second surprise comes if you indulge in extremely rough play, it punishes you in stages on the park. After a few moments of flopping good intentions, penalties are awarded. Each player in turn has a chance to shoot for goal from the penalty spot. The fight is on but the penalties, well, you know what I think!

While I'm in a critical mood I'll also have a moan about the goalkeeping during the match. Maybe it's me but I found it very difficult to judge the level of the ball when playing my keeper for the first. Perhaps a little more practice will reveal a few hidden secrets in the art of goalkeeping.

The view of the pitch is traced as the view flicks to the day television centre with which Commodore adopted for their game and the side to side scrolling is just as simple. Further comparison between the games would not really be fair because the screen looks the same in both games. Really it's one of you just you today and today your chance, beating an odds that this game costs just under £8.

My verdict on Five-a-Side is that it is a bit well put and is for all appearances — "Here we go, here we go, here we go." **E.D.**

Price: £5.95

Publisher: Amsoft

Address: 4 The High St, Harley Street

**G64**



★★★★★

### Flipped



★★★★★

### Hooked



★★★★★

### Keen



★★★★★

### Yawning



★★★★★

### Comet

★

## Out On A Limb

Jack the lad in the bonnet is at it again. Somewhere in the 22 instances of this game there are three hidden treasures. Jack must find the golden egg, the ring and the bag of gold as quickly as possible. To do this he must first climb the evergreen vegetable to the roof.

On the way up the bonnet is over Jack must leap from limb to limb avoiding bees and ducks and he reaches the clouds. At this point he finds he can actually walk on the clouds up to the castle but the task becomes harder the higher he climbs with birds pelting him between the skyways.

Inside the castle the game takes on the appearance of a simplified Jet Set. With each room various characters and other little problems to be overcome as a reward of points. Although each screen does not have as many obstacles as Jet Set, this does not mean that it is no more to complete. Every new location has a logical series of movements that it takes time to think of them and many means (using all four lives many times before achieving your goal).

Back out of the lives are used up you start a fresh game from the bottom of the bonnet with the game's continued view brought out by familiar five pin Fun theme.

The graphics for the game are what I would describe as warty phantasies and solid looking, ideal for a lifestyle game. Not the best game of this type that I've seen but by no stretch of the imagination is it the worst. **LJB**

Price £3.95

Publisher: Antlog

Address: 8 The High St, Harleybury

C64



## The Hobbit

Here it is for the CPC640! Briefly, you play the role of Bilbo Baggins, the Hobbit from Tolkien's book. Your task is very simply specified. Find the treasure and steal it as the clock runs, in the opening chapter segment. Books have now been written as to how to get round the problems you will encounter on your travels in Wilderland. And there are obviously some problems to solve, though the various documents you ripped across you that reading the accompanying copy of the novel will help.

Unlike the Spectrum version, from which all the others are derived, this one features a really cunning leading screen, the like of which I haven't seen before on the Amstrad. It features a superbly drawn dragon in a spiral column. When finally loaded, however, the graphics faithfully follow the Spectrum's, with perhaps one or two improvements, though more slowly drawn. Many locations are illustrated the way, following the misadventures of your arrival in a new window at the bottom of the screen. Instructions which follow wipe it out, however.

It's hard to remember that this is the program which started the adventure revolution with characters to whom you can talk, who respond to you, and who have their own independent existence, carrying on with their business without you! Not only that, but instead of the usual word-based interface, the unique interpreter allows quite complex sentences.

It's very, very good, but rather dated now, as others have followed its lead. If you want the original, you must pay the rather over-the-top price. **BAM**

Price £14.95

Publisher: Melbourne Her

Address: Castle Yard Her, Castle Yard, Richmond TW9 1ST

AMSTRAD



## Bridge Player II

This program gives a simulation of the game of contract bridge. To the uninitiated, bridge is a card game in which you bid with your partner in order to decide on the number of tricks with a specified trump suit which must be collected (or overfulfilled).

It should be understood that you won't learn to play the game by simply buying this program. It's really intended to polish up your partner.

The display is quite simple and shows the four normal playing positions. At the bottom right hand corner, a window is given showing the current score, current contract and number of tricks won. Since the program is written in machine code, all actions are instantaneous.

At any stage of the action you can get an interpretation of any given bid. This enables you to ensure that you bid matches your hand. The program recognizes the standard Acol system but beyond that it's a bit staid.

It can't, for example, give an interpretation of a pre-emptive bid. The standard of bidding was reasonable although I missed a certain refinement in 2NT above the third level. Occasionally, the bidding was disturbed with the program making an needless trump bid. The play of contracts tended to be quite good although the program lost trumps rather too often.

On the whole this is a fine program which plays a playable game and, in small doses, is enjoyable. Strictly for the better beginner. **A.W.**

Price £8.95

Publisher: CP Software

Address: 2 Cliffe Rd, Uxbridge, Middlesex UB8 3LD

C64



## MAVERICK



## Maverick

In the poker simulation you play against five others, each with their own characteristic style of play. Each following in business, banking and timidity are chosen for. These are allocated randomly at the start of play and remain constant for the full session. By using your powers of observation you should be able to assess your opponents and give an advantage.

The play is straight draw poker. After the first round of betting you can change any of your cards. There then follows the final round of betting and the inevitable showdown.

At the beginning you can choose the size of each player's bank rolls. This means that if you want a short game, you can have one. After each hand, you have the option to accept the progress of each player, change the bet limit and, if allowed, have a look at the winner's last hand.

The display is simple, with your cards depicted along the lower part of the screen. Your opponent's names are listed down the upper left hand side. As each hand progresses, messages and actions are printed beside the relevant player. These messages are fitting to emphasize your opponent.

The test of this game is one of careful and effective programming. The programmer has obviously given thought to the display and the program runs smoothly without bugs. The standard of the opponent's game is good giving a challenging game. The instructions are detailed and the price is reasonable. Overall an acceptable simulation representing good value. **M.B.**

Price £5.00

Publisher: Cass Computer Simulations

Address: 14 Langton Way, London SE13 7TL

SPECTRUM





### Sorcery

This is a conversion from the C64. It is an arcade adventure which wouldn't necessarily appeal to the true adventure fan, but it certainly is an improvement on the arcade clone.

The star feature just has to be the graphics. The game boasts 30 different screens which are really wonderful. You have scenes that show the various parts of the mansion in which a lot of the action takes place and much of the country around. Take a look at some of these on the cassette tape. All drawn in such incredible detail that it gives a good home for genuinely wonderful scenes whenever you view.

But there is more. The game gives places for you to solve a few secret puzzles on receiving other secrets depending on the end. Nevertheless, during your exploration you will come across various objects, some of which will be of use while others are a hindrance.

In spite of some you will be pleased by the saving system — in both cases — which can be disrupted. However, this does have the effect of draining your money and so you have to spend time in fact there is some of replenishing your lost energy but there is an overall time limit shown by a gradually disappearing lightbulb.

Each screen is accompanied by a description of your location and a statement of what you are holding.

You will need to play carefully and, I suspect, to map your journey if you wish to make serious progress.

There is so much to comment on this game that I am sure it will become a classic in its own right and produce lots of comment from both arcade and adventure fans alike. You must buy this one! **M P**

Price: £3.95

Publisher: Virgin Games

Address: 3-4 Vauxhall Yard, Poppleton Rd, London W11 2JX.



### Darts

I must confess to not having seen any other darts programs for the Spectrum, so I can't make a comparison. The Morningstar is quite the standard. Single players get an easy BASIC program with standard code-driven graphics. The advanced graphics module will find. A microcomputer darts board is drawn over where the whole of the screen.

A small graphic pattern appears, however, and with a moving arm. By entering the space bar, you stop the arm for a second, then repeat the process for horizontal. This gives you a dot that appears from the center of the screen, becomes a blurry one, then stops at the board. You score points, and you can be good. I'm not sure, but in order to think, you have to be good all round the board, and that takes some practice.

When you also a good enough, it's time to load the main program, which gives you the opportunity to play Championship darts from 501 or 101, round the board, or killer darts. Up to four people can play.

Surprisingly, the computer doesn't play against you, so practice is all you can do. Unfortunately, this isn't very sophisticated either, more of a 1980 game. The other hand, the price is relatively modest, and it's one of the few new releases which will run on a 128K Spectrum too. Overall, worth a try if you and your friends come on darts without a dart board. Otherwise, perhaps a shade overrated. **B M**

Price: £4.50

Publisher: Slogger

Address: 215 Beacon Rd, Chesham, Kent



### Misspades

Here we have a version of that old arcade favourite involving a card-type game and plus many other secrets. The version is simple but rather bloody. You control a semi-divergent vehicle and can move around the bottom two-thirds of the screen.

The area is covered with misspades which require your movement, and a misspade moves from the top of the screen down. As it encounters a misspade, it changes direction. You must shoot all the misspades of the misspade.

It makes life difficult, a wide range of secret including spades, hearts, wags, and misspades, butters, from the center around the screen. Some, such as spades and wags, go for you. Others just go in the way. Control with an arrow, anything more a long life.

The interesting point of this game is that it carries a version for the 64 on one disk and versions for the VIC-Plus/4 and C16 on the other.

Graphically the game is very good with very well rendered images. The spades on the C64 version are particularly effective. Each screen features a different way to collection of misspades, each accompanied by accurate sound effects — the buzzing of the wags and pats is excellent.

I tried both the C64 and VIC versions, both added the responsive machine to the full. A feature made is provided to enable you to go, and to things. While this isn't an original game, it's one of the best versions I've seen. It's certainly the most honest. Good value too. **M W**

Price: £5.95

Publisher: Androg

Address: Unit 10, Victoria Ind Park, Victoria Rd, Oxford, Ox4 1AU

C64  
VIC-20



### German is Fun

This is one of a series which offers you the chance of a pleasant introduction to a language in the privacy of your own home.

The course has two different elements. Firstly you learn a vocabulary through pictures and words on screen and secondly you can synchronise the other side to hear the words as well. This audio-visual approach gives an edge on other tape-only courses but the disadvantage is in the relatively small vocabulary it teaches you.

There are no screens, just built up on the words are introduced. One element is usually answered, for example, the baseball bounding of the words. The drawings are very good and interesting with a system to take them single or again after the whole in a demonstration mode. Once you select your picture you may choose to hear the German and English (or) appear in the same are drawn as you may not source if it is not used by a course. If you get stuck, typing a key will give you the next page.

The package includes a book, the cassette, a manual, a card, a sheet and a sheet. These represent the basic vocabulary needed, as the cassette only suggests, for 'the student, teacher, mother or brother'.

There is a phrase-only mode which helps in making sense of what you have learned. In addition there are accounts dealing with numbers and telling the time.

This is a program which is concise in its approach and versatile enough to cope with the beginner's terminology. Recommended as a very simple introduction to the language. **M P**

Price: £7.95

Publisher: CDS

Address: Silver Hill, Silver St, Daresbury, Warrington CH4 1PL



## Rocko

Three boxing games have recently appeared on the Spectrum. This one is written by Spanish software house Euzenka, and has the most obvious title.

The game presents a three dimensional view of the ring, with surroundings viewed. Your opponent faces out of the screen, with your man seen from the back, as large, as-really-shaded, black and white graphics. There is a choice of four moves: left and right attack and defence, and then two slaps to the mouth, which is not very good sportsmanship. Strength bars under each indicate who is winning, and what other bar measures pace, a knockout is achieved. Three knockouts in a round allow you to progress further or the game to finish.

To become world champion you must fight four successive tough opponents of various characteristics. There are postcards in small well-presented cards at the bottom of the screen — but although the graphics change each round, your opponent stays the same throughout.

Animation is clever, particularly the facial expressions, although occasionally a wince where one is punching.

In general, playing this game is unexciting and the sound mediocre. With only four moves, little skill is involved, so the player is reduced to Donquixote-style key bashing, but without the fun. It is also rather easy — pressing the same key, non-stop, will take the player through to the third round. I found it unsatisfying, and once the world championship is gained, the lack of winning means the game becomes boring. It's overrated, and generally a disappointing game from Euzenka. **P.B.**



## International Basketball

Commodore had a hope for with the highly popular International Soccer. This game, I presume, is a sort of follow up. The interesting feature is that it's copyrighted in 1983. Why the delay in its release?

The game is very similar in feel to the soccer game and is similar in format except that you play as a gun — not necessarily. Due to spite-motors, each side comprises of three players. Your opponent may be either the computer or another human. The computer can play at one of nine skill levels. In addition, you may choose between MIK and NC-AAA rules. Since I don't play basketball, I haven't a clue what the difference is.

As usual, you can only control a single player at any one time. This player is signified in a different colour. This player can be changed by holding the fire button down. You can pass the ball to other

players by a quick stab at the fire button.

The graphics are comparable to its predecessor and are colourful with good animation to draw. The players are well designed and convincingly animated. As you dribble on the playing area, the ball is instantly bounced and the opposition move relentlessly to intercept you. If you score the audience applauds with realistic sound effects. At the end of the game, the teams appear on screen and the victors receive a cup.

At low levels the computer plays an undeniably poor game but things get more interesting. At level nine, as you would expect, the opposition is quite tough. I don't know if it's simply my naturally aggressive style but rather a lot of goals were scored to the opposition, often within an obvious margin. This was about the only good feature of the game. On the whole an additive game which is first class value. **A.W.**

## Dark's Dilemma

The CIB is such a relative newcomer to the home computer market that the software for it has remained of old-fashioned simplicity. Hopefully, Dark's Dilemma breaks the dam of a new age.

The game consists of two phases, the first being a shoot the alien game, the second a game. In the first phase you study a creature — what a waste in a board or a turntable. I'm not sure which — against a year killing off a specified number of alien there are 25 rooms to explore, each one different and with one of a variety of alien inhabiting it. When you have disposed of the enemies you are given a part of the game which forms the second part of the game.

The screen is divided into two main sections, the playing area and an information area. In the information area is a diagram showing your position — shown in the first degree — and a grid containing your game pieces. These pieces are movable using the joystick — and when you have completed the part of the game you are awarded to the beginning of a new game but with more alien to destroy.

There is no music included but the sound effects used, especially the beeping indicating as you run for cover, are well done. Overall, this is a delightful game, it's been may not be completely original but it's implementation is well thought out. This is definitely something for CIB and Plus 4 owners to look at. **N.W.**

Price: £1.95

Publisher: Gemini Graphics

Address: Unit 35, The Parkway  
Ind. Ctr., Hennessy St.,  
Birmingham B7

Price: £1.95

Publisher: Combined  
Business Machines

Address: J. Hensley Way,  
Wildon, Corby, Northants,  
NN17 1JX

Price: £7.95

Publisher: Gemini Graphics

Address: Alpha House, 18  
Carnarvon, Sheffield S14 6FS.



C64

CIB





### Hypersports

Licensed from the Konoson arcade game, *Hypersports* features futuristic aerodynamic, sleek, shooting, jumping and weight lifting. It's one of those games goytrick manufacturers love — you can study week ends — and different models make for different games.

As this is the Spectrum version there are no guns, coloured spaces, but they are beautifully animated — smoothly, and no flickers. Backgrounds scroll at different rates and sound is provided. In fact the whole thing is very well done, though not perhaps at the highest technical standard. There's no attempt at reality — it's more like a cartoon.

To start controlling your posit the fire button, at the gas (so changing) then left and right like fly to move the arms of your transmitter, pressing the fire button when freewheel is called for. If you can't meet the qualifying time, you won't get through to shooting, where you are left and right to fire when the target is in your mirror. Again, you must reach the target zone to go on to jumping. From the fire button to run, running, and then you reach the springboard and the horse. Then jump away left and right. I'd like to tell you about the rest, but, I'm not good enough to qualify yet!

My protest was literally too, and I won the title off a finger containing — a fine solid round! Well, accused, and for me, highly addictive. I'm a CAN'T get the hang of the jumping still, and then.

D.M.

Price £7.95

Publisher: Imagae

Address: 4 Central Street, Manchester

SPECTRUM



### Witchswitch

English has definitely come up with a winner here. First task is to get a magic pouch from various sources on a wide variety of screens. Eventually you will drop it into the witch's brew and into the flow of another level reaching a village. In the first screen you must hop between rooftops to get across the swamp safely. As you move, the screen scrolls from right to left.

The second screen has a summary of a river with a bridge across it. You must hurl stones at the attacking ravens and avoid cuts on footpaths before you may cross the bridge. At this point the magic pouch is passed to you.

The acid lake comes your way next. You must dodge the shoulder clouds, snakes and jumping fish. If you touch a green interface then you are instantly swept on to the next screen.

Spirits, wogs and mini-recessed events are in the forest. You must talk them with your bow before you touch you. This part of the game is very hard, and I haven't got past it yet.

The graphics are quite good — lots of interesting effects are used. The game can also be used of the sound. A variety of different components are placed throughout the game — you don't just get the same thing over and over again.

The game really falls down when it comes to the detailed documentation. There are a different on view of the screen — but you don't tell anyone exactly what you should be doing.

D.M.

Price £4.95

Publisher: English

Address: Box 41, Manchester M20 1AD

C64



### War Machine

This game is yet another bottom-rolling trend in those of us who aren't prepared to shed our too much money on games. After due consideration, I must say that this is the worst game I've ever had the pleasure to play.

According to the manual, most you have been left in a distant outpost of the empire and are tasked with protecting the remaining depots of resources in order to achieve this goal, you must chase the space ships which passed the ship and avoid wandering land vehicles. With a single press of the fire button a missile is set back vertically and horizontally. The space ships will bomb you, you'll have a chance, but the land vehicles nearly collide with you.

The screen also shows a grid of stars like with paths between them. You may move your vehicle along any of these paths. The land vehicles move at random from left to right down one of the paths. You either shoot them or move to another path. You simply shoot the ships or vehicles and sometimes points. When you score sufficient points, you move onto the next level. Higher levels simply seem to be faster rather than more difficult.

The game seems to be full of collisions. In the space ships collide with each other, for example, they are destroyed and you gain the points. The graphics and sound are just about average but the game play is terrible. It's just a case of endurance rather than skill. Notwithstanding the price, this is a game to avoid.

A.W.

Price £1.95

Publisher: Pocket Money Software

Address: 41 Truro Rd, St Austell, Cornwall

C64



### Cluedo

I have to confess that I don't like *Cluedo* as a board game, and find it very boring, however

The basic idea is as follows, you are shown the ground floor plan of a house, and the house are on people and the weapons. At the start of each game a location, a weapon, and a murderer are chosen by the computer. Each player, who can be your mate or human opponent, is then given "clue cards" — person, weapon, location — and then if the clue is in your hand, those things can't have been used for the murder.

The game proceeds by having a clue you then move the appropriate number of squares. When you eventually get into a room, you may make a suggestion as to who did the murder in that room and with what weapon. All the other players must then look at their cards, and the first one to hold one of the suggestions you have made, must show it to you.

Thus by a process of elimination and movement about the house, you can determine who did what to whom, where, and with what. When you are absolutely sure, you can make an accusation. If right, you win. If wrong, you are out of the game which then continues without you.

Now the most variable game for computer implementation — your opponents are those easily — but an adequate technical job. Even though you can turn off the verbal sound, it still takes ages to play. But if you like *Cluedo*.

D.M.

Price £9.95

Publisher: Leisure Games

Address: 3 Mornington Road, London W16 1EG

SPECTRUM



# MACHINE CODE — THE EASY WAY



**David Ellis will have you jumping merrily around your machine in this weeks article**

**I**n several of my earlier articles reference has been made to the "jumpblock" on the AMSTRAD without explaining what it actually is.

A jumpblock is a series of jump instructions placed in RAM which call various routines that are used by the firmware. Thus the firmware routines can be easily called from your own machine code routines, or they can be "patched" to jump to your own routines.

Figure 1 shows how the jumpblock works in normal operation. The "Main" program here refers to the program that is controlling the running of the computer — the operating system. To access firmware routines a call is made to the jumpblock at the required address, in the example here it is given the name BLOCK 1.

The first instruction in BLOCK 1 is a RST1. This is equivalent to the Z80 instruction RST 1. RST stands for RESTART and is a special kind of jump. On the CPC464 it causes a jump to take place to a routine in the LOWER ROM. The two bytes that follow RST1 contain the address of the routine in ROM. However, bits 14 and 15 are not used to signal which ROMs are to be enabled or disabled and the remaining 16 bits contain the actual address to jump to.

For the main jumpblock here 14 and 15 signify the LOWER ROM, and describe the UPPER ROM. Most of the useful routines are located in this main jumpblock which has from \$B000 to \$B00F. To see the whole list of routines, and what they do, you will need to buy the optional "Complete CPC464

Operating System", available from Amsoft, for a little under twenty pounds. Expensive, but invaluable!

Some of the firmware routines can be called directly by moving a CALL to the jumpblock address. You may like to try some of the following.

and then the HL register contains the length of the buffer.

The program shown in listing 1 will set the length of the buffer to 1K and the start of the buffer at \$B000. You can either POKE the numbers into memory, starting at \$7100, or use the BASIC LOADER program. The DATA will be:

100 DATA 17,400,400,0,0,0,32,215,244,204

If you RUN the program and

CALL \$B000	=	Shutdown the 'ESC' key.
CALL \$B002	=	Initialise the text VBO.
CALL \$B00C	=	Swap pen and paper this over.
CALL \$B00A	=	Initialise the Graphics VBO.
CALL \$B006	=	Clear the Graphics window.
CALL \$B00F	=	Initialise the whole screen pack.
CALL \$B008	=	Turn cassette motor ON.
CALL \$B007	=	Turn cassette motor OFF.
CALL \$B007	=	Reset the firmware jumpblock.

Most of the other routines require values to be passed to them. These values and the routines that need to be used are in the Firmware Manual and this is one reason why this manual is essential reading.

Many useful operations can be carried out by merely CALLING these routines from within your own machine code program. For example, \$B003 calls a routine for allocating a buffer for the expansion straps. In normal use this buffer is set at 156 bytes, which as you have no double found, will only allow you to set up a limited number of function keys. The routine requires that the DE register holds the address of the buffer to be used,

then type CALL \$B000 or CALL \$B100 then you will have found that you can set up your function keys using KEY and KEY DEF with a whole 2K of buffer space to use. Remember that you can set up 32 keys on the CPC464 as function keys, although the user manual is not very clear on this point.

Figure 2 shows an example of how the jumpblock could be patched. The three instructions in BLOCK 1 have been replaced by a jump to the machine code routine at \$B000. This can either be a "stand alone" routine which replaces the ROM routine completely, or, as in the example that follows, it may be a routine that performs an operation and then jumps to



# WORLD FLAGS

[illegible]

```

2250 RETURN
2300 BORDER high: PAPER high: INC 7) CLR
2400 FOR A=10 TO 34: PL0T 4,0: G02B 0.144: NO

```

**SUBJECT:** [REDACTED]  
**DATE:** [REDACTED]

```

0000 DATA 70,80,90,100,75,121,95,155
0000 RETURN
0001 REM Canada
0002 LET p=0: GO SUB 1000
0003 LET p=0: GO SUB 1100
0004 FOR a=0.7 TO 2.1: PLOT 100,2,32,p: DRAW
100,11,0: NEXT a
0005 RETURN
0006 REM Comoros
0007 LET p=0: GO SUB 1000
0008 LET p=7: GO SUB 1000
0009 INC 1
0010 FOR a=0.1 TO 0.7: PLOT 32,7: DRAW 10-10,
0,0: PLOT 32,32-10: DRAW 10-10,0,0: NEXT a
0011 INC 7: RETURN
0012 REM Denmark
0013 LET p=0: GO SUB 1000
0014 LET 00=0: LET p=7: GO SUB 0000
0015 RETURN
0016 REM Egypt
0017 LET p=0: GO SUB 1000
0018 LET p=7: GO SUB 1000
0019 LET p=0: GO SUB 1000
0020 FOR a=0.4 LET a=0.8
0021 LET a=0.8: LET y=0: GO SUB 1000
0022 LET a=0.8: GO SUB 1000: INC 7
0023 RETURN
0024 REM Finland
0025 LET p=0: GO SUB 1000
0026 LET 00=0: LET p=0: PRINT 1: GO SUB 1000
a: PRINT 0
0027 FOR a=0 TO 10: PRINT at 0,11: PAPER 7,1
0,1: NEXT a
0028 FOR a=0.5 TO 1.0: PLOT 00,p: DRAW 100,20
30,0: NEXT a
0029 RETURN
0030 REM France
0031 LET p=0: GO SUB 1000
0032 LET p=7: GO SUB 1000
0033 LET p=0: GO SUB 1000
0034 RETURN
0035 REM West Germany
0036 LET p=0: GO SUB 1000
0037 FOR a=0 TO 10: PRINT at 0,4: PAPER 0,10
0,0: NEXT a
0038 LET p=0: GO SUB 1000
0039 RETURN
0040 REM Great Britain
0041 LET p=0: GO SUB 1000
0042 FOR a=0 TO 2: PLOT 32,p: DRAW 000-0,10
0-1
0043 PLOT 00,10: DRAW 000-0,100-1
0044 PLOT 00,10: DRAW 000-0,110-0
0045 NEXT a
0046 CRUISE 1
0047 FOR a=-70 TO 74 STEP 4
0048 PLOT PAPER 1,127,00: DRAW PAPER 107,0
0
0049 PLOT PAPER 1,127,00: DRAW PAPER 1,0,0
0
0050 PLOT PAPER 1,104,00: DRAW PAPER 10-70,
40,00
0051 PLOT PAPER 1,100,00: DRAW PAPER 107,0
0,00
0052 NEXT a: END(00,0)
0053 LET 00=0: GO SUB 1100
0054 LET p=0: GO SUB 0000
0055 RETURN
0056 REM Hungary
0057 LET p=0: GO SUB 1000
0058 LET p=7: GO SUB 1000
0059 LET p=0: GO SUB 1000
0060 RETURN
0061 REM Iceland
0062 LET p=0: GO SUB 1000
0063 LET 00=0: GO SUB 1100

```

```

4500 LET p=2: GO SUB 1000
4510 RETURN
4599 REM [end]
4600 LET p=7: GO SUB 1000
4710 LET p=4: GO SUB 1000
4820 FOR i=2 TO 7: PRINT AT 4,i: BRACHT 1: PA
      "i, NEXT i
4830 RETURN
4900 REM [end]
4999 REM [first beg]
7000 LET p=4: GO SUB 1000
7110 LET p=7: GO SUB 1000
7220 FOR i=2 TO 4: PRINT AT 4,i: BRACHT 1:
      "i, NEXT i
7230 RETURN
7377 REM Italy
7100 LET p=4: GO SUB 1000
7110 LET p=7: GO SUB 1000
7120 LET p=5: GO SUB 1000
7130 RETURN
7177 REM Japan
7200 LET p=7: GO SUB 1000
7210 FOR i=1 TO 22 STEP .5: CONSOLE IN: 2: LTR
      "i, NEXT i
7220 RETURN
7399 REM Malabar-Lands
7300 LET p=5: GO SUB 1000
7310 LET p=7: GO SUB 1000
7320 LET p=6: GO SUB 1000
7330 RETURN
7399 REM New Zealand
7400 LET p=5: GO SUB 1000
7410 GO SUB 1000: LET i=4
7420 FOR i=22: RESTORE 7420: FOR p=1 TO 4: READ
      a,y: GO SUB 1000: NEXT a: INC i
7430 DATA 174,180,194,74,178,74,174,40
7440 RETURN
7477 REM Norway
7500 FOR i=2 TO 17: PRINT AT 4,i: POWER 4: IN
      "i, NEXT i
7510 GO SUB 1100
7520 LET p=5: GO SUB 1000
7530 RETURN
7577 REM Pakistan
7600 LET p=4: GO SUB 1000
7610 LET p=7: GO SUB 1000
7620 LET a=184: LET y=5
7630 LET p=7: GO SUB 1000: LET i=1+1+23
7640 GO SUB 1000
7650 LET a=184: LET y=102: LET a=55: GO SUB 1
      100
7660 RETURN
7777 REM Peru
7700 LET p=7: GO SUB 1000
7710 LET p=5: GO SUB 1000: GO SUB 1700
7720 RETURN
7799 REM Poland
7800 LET p=5: GO SUB 1000
7810 LET p=7: GO SUB 1100
7820 RETURN
7899 REM Portugal
7900 LET p=5: GO SUB 1000
7910 FOR i=22 TO 104: FLIP IN: 4: 1, 2: DRUM
      "i
7920 RETURN
7999 REM Romania
8000 LET p=5: GO SUB 1000
8010 LET p=4: GO SUB 1000
8020 LET p=7: GO SUB 1000
8030 RETURN
8077 REM Spain
8100 LET p=5: GO SUB 1000
8110 LET p=7: GO SUB 1000: GO SUB 1400
8120 RETURN
8177 REM Sweden
8200 LET p=5: GO SUB 1000
8210 LET p=4: GO SUB 1000
8220 RETURN
8277 REM

```







# BEGINNING MACHINE CODE



**This week's episode for Spectrum owners has Diana and Colin Smith explaining the logical operators AND, OR, EOR and starting to Stack it all up**

In our last article, we covered 4-bit or single byte arithmetic and IF/THEN constructs. We are now going to extend that to 16-bit or two byte numbers. In doing so, we will cover the logical operators AND, OR and XOR, together with the machine code STACK instructions.

Just as the A register was used to Accumulate the Answers in 8-bit arithmetic, the HL register pair is used in 16-bit arithmetic. The 16-bit instructions work in the same way as their 8-bit counterparts described in the last article. Instructions for the register pairs covered by this series are summarised in Table 1 together with their codes.

**Table 1 16-bit Arithmetic Instructions**

Instruction	Code
ADD HL, HL	41
ADD HL, BC	9
ADD HL, DE	21
ADC HL, HL	237 00
ADC HL, BC	237 10
ADC HL, DE	237 60
INC HL	35
INC BC	3
INC DE	19
DEC HL	47
DEC BC	11
DEC DE	29
SBC H, HL	237 90
SBC HL, BC	237 40
SBC HL, DE	237 91

The first point to note about Table 1 is that the ADC and SBC instructions are two-byte instructions. The designers of the Z80 microprocessor have managed to cram a quarter into a port pin by using two (or more) bytes to specify an instruction. If they hadn't done this, there would only be 256 machine code instructions available!

You will find the ADD HL, HL instruction listed in Appendix A of the Spectrum Manual under code 186 — after ED, ED is the hexadecimal (base 16) number (equivalent of 237 decimal). We are not going to complicate this series with hexadecimal numbers as a beginner can manage quite well without them. If you want to know more, then read Appendix B of the Spectrum Manual. In Appendix A, you will also see the “— after C” column. C is hexadecimal for 255 decimal.

Note that the INC instruction for increasing the value of a 16-bit register may affect one or both bytes, depending on whether or not the low byte is already equal to 255. If it is, the high byte will go up by one and the low byte becomes zero.

The SBC instructions operate on 16-bit numbers in a similar manner when decreasing their value by one. Both instructions operate modulus 65536, so INC/DECing 65535 results 0.

You will also note from Table 1 that there are no 16-bit instructions for SBB or CP.

You have to use an SBC instruction instead. This can cause a problem if the carry flag has been set by a previous operation and you don't want it included in the subtraction. This leads us neatly onto the logical operators because a 16-bit instruction will usually be preceded by the AND A instruction which has the effect of resetting the carry flag.

Use an example or the decimal loader given in the first article of the series to enter the code of Listing 1. Run the code with PRINT USR 3000 and you should get an answer of 500. Delete the AND A instruction from the assembler as DATA, assemble and load the code again. After running, you will get an answer of 499.

To understand the logical operators, we need to look at the bits within the bytes. Suppose we have a notion of code:

```
LD B, 17H
LD A, 25
AND B
```

Each bit of the A and B registers is compared in turn. If both bits are on (1), the A register bit remains set. Otherwise it is reset (0). This becomes clearer when we look at the numbers in binary:

```
A AND 0 0 1 1 0 1 1 1
B      0 0 1 0 0 1 1 0
-----
A      0 0 1 0 1 1 0
```

You could try applying what you have learned so far as the series to print out the CHRS of the value left in the A register. It should be the “A” character.

Another use of the AND instruction is to limit the range of numbers. Suppose you need to calculate the column position of a character on the screen. You need to limit the value to the range 0-9 so:

```
Value 00000011 20
Mask AND 00011111 30
Result 00000011 7
```

If you AND the calculated position with a mask value of 31, you will get the column position within the correct range.

You can AND the A register with a number, one of the eight bit registers or with (HL). Because only the A register can be used as a destination (e.g. A AND C or AND C), the remaining two logical operators, OR and XOR, operate on a register register.

The OR instruction leaves the A register but set **all** of the bits being compared and set. Otherwise the bit is reset.

```
A OR 00110111
B 10101110
A 10111111
```

A mask used special case of the AND instruction. If both registers are zero. If that is the case, the zero flag is set by the OR instruction. It is used in the operation of PCOR/NEXT loops. If the number of repetitions is greater than 255 where you can't use the B-to-DUMP, the instruction. We will see this to great use later.

The XOR instruction — "exclusive or" — is used less commonly. The A register is set if only one of the bits being compared is set.

```
A XOR 00110111
B 10101110
A 10010001
```

If you are feeling very mischievous with your computer's memory, XOR A will do the same for you as LD A, 0 but do it in one rather than two bytes.

Load the code from Listing 2. This is a short routine which works through the attributes area of the screen memory in multipass, the attribute bytes, changing the PAPER colour but leaving the INK colour and the FLASH and BRIGHTNESS values un-

changed. Below the loader, then reset and RUN these lines of BASIC.

10 PRINT LINE 7: FLASH 1:  
"Openair".

20 RAND USR 50000

Now match the code line

15 POKE XXX.

and RUN it again, to enter another option than the BASIC.

FOR n=0 TO 90: PRINT  
OVER 1, PAPER 1, CHR\$(  
n);NEXT n

Finally, let's mention the machine code. This is a section of memory where you can temporarily store 16-bit numbers. It is well compared to the stack based on which bits, etc. are spread. The last piece of paper PUSHER used the code has to be PUSHERed up to get at the paper underneath.

The machine stack operates in just the same way. The last 16-bit number PUSHERed onto the stack is always the first to be PUSHERed off. The microprocessor or keeps track of the memory locations for you, so you don't need to know exactly where the numbers have been saved in memory.

The AF,BC,DE and HL registers can all be PUSHERed and PUSHERed. Because there are so few 16-bit "variables" (register pairs) available, these stack instructions are often used to free a register just temporarily while it is used for another number. The original number is then PUSHERed back.

Another use is to transfer a number from one register pair to another. This use is demonstrated in Listing 3 which is an example of multiplication of numbers. Load the code and run it with

PRINT USR 50000

The answer is initially held in the HL register pair. By moving it to the BC pair, we can use the PRINT command of reversing the code to print out the answer.

PRINT USR XXX runs a machine code routine at address XXX and prints the value held in BC on return to BASIC.

In the next article we will look at the block move instructions and the instructions for reading the keyboard and making sounds.

Listing 1.

```
30000 LD A,200 50
30001 ADD A,A 51
30002 LD HL,1000 52
30003 37 53
30004 44 54
30005 1 55
30006 36 56
30007 30 57
30008 LD B,H 58
30009 LD C,L 59
30010 RET 60
```

Listing 2.

```
30000 LD A,0 61
30001 ADD A,A 62
30002 ADD A,A 63
30003 ADD A,A 64
30004 LD B,A 65
30005 LD HL,20000 66
30006 67
30007 68
30008 69
30009 70
30010 L1 DEC HL 71
30011 DEC SC 72
30012 LD A,(HL) 73
30013 AND 100 74
30014 75
30015 76
30016 ADD A,B 77
30017 LD (HL),A 78
30018 LD A,B 79
30019 OR C 80
30020 JR NZ,L1 81
30021 RET 82
```

Listing 3.

```
30000 LD HL,0 83
30001 84
30002 LD DE,00 85
30003 86
30004 LD SC,00 87
30005 88
30006 L1 DEC SC 89
30007 ADD HL,DE 90
30008 LD A,B 91
30009 OR C 92
30010 JR NZ,L1 93
30011 94
30012 PUSH B 95
30013 POP BC 96
30014 RET 97
```



# PERIPHERAL

**Canon's PW-1080A is one of the new breed of dot matrix printers that have several fonts and a very low price — Clive Gifford finds out if it's worthwhile**

The dot-matrix printer market is becoming an overcrowded one with models seemingly being released every week. Canon, despite their relative inexperience in the low-cost printer field, look very likely to succeed with this model and this, with 15 inch carriage, PW-1108A printer.

This printer is well packaged, as most printers seem to be, and takes but a few minutes to set up. That is in part due to the better-than-average manual which is supplied with the machine. It is less than half a dozen of any 'Japanese-English' which has become the norm with printer manuals from the Orient. Unfortunately a list of all down by plugging into the complex internal data brought about the steady writing and illustrated set-up-up chapter. The user should really have had a simple explanation of how to obtain some of the more common control codes such as obtaining underlined printing and a dashed line (B) as opposed to 0.

The PW-1080A is a stylish-looking machine, very neatly designed and with the minimum of protrusions. The front of the machine sports the three menu-brane switches used for switching the machine on and off line and for line or underlining the paper. The page/line switch and the paper feed knob are situated on the right hand side of the printer while the Carriage (or MSC) motion is positioned at the back.

The printer has a print density selector which can be switched to between 1 and 5 (it is suggested for most paper types and conditions). The DIP switches are numerous and allow you to control various printing parameters such as characters per line and so on. These switches and their capabilities are well detailed in the manual but unfortunately are situated within the machine so sharing data easily involving the top cover to get inside.

As is the case with most dot-matrix printers, both roll or cut-out fed paper can be used. Roll paper must be placed in the printer housing and this limits

the diameter of the paper roll that can be used to a maximum of 10cm. My old paper rolls are far larger than that but I found that if placed behind, on a roll stand (from my old Star DP120) and fed through the back of the printer housing, I could use any size roll. In addition one can use single sheets of paper which is very useful for writing letters. Alignment of paper takes a little while but is just a matter of getting used to the controls for paper setting.

The printer has two print modes, normal and Near Letter Quality (NLQ). Let's deal with each in turn. The normal mode is similar to the basic Epson mode using a standard 11 by 5 dot matrix. It prints at a rapid 80 characters per second (be-  
development, emphasis, subscript and also styles. Another very useful feature is the ability to print proportionally which can add a look of professionalism to your printed output.

handy feature particularly for budding accountants who rely on the printer's ability to print out all data and program listings sent to the printer in hexadecimal.

Optional features include a PCG RAM which allows you to design and store up to 18, of user-designed characters and a number of different font ROMs. The font ROMs simply give the printer a new character set to print out. This is similar to changing the daisywheel or setting up other printers and typewriters. As printer fonts different fonts are available, the most useful, in my opinion, being the same font. The PCG RAM is priced at £49.94 while the fonts are individually priced at £27.50.

I've given this printer a real bashing in the time that I've been reviewing it, but I know that I wouldn't be changing colours very quickly. Each ribbon costs £9.50 but will last for 3 million characters, one third of the life of the first brand, approximately. The printer is very solid and will last anybody a long, long time. If you want to do more than just print out program listings and were seriously considering a daisywheel, then I suggest that

Figure 1

On Friday, April 2, it features both an old price and a new one. The new one is printed below the old one. The old one is printed above the new one.

The above was printed in the normal mode. This is contained in the NLQ mode. Almost as good as a modern daisywheel printer and a superior printer.

The NLQ mode is far slower at 22 characters per second but the result is, frankly, superb for a dot-matrix printer of this price. Figure 1 is a sample of both modes in action and as you can see, the NLQ gives the budget daisywheels a good run for their money. An additional advantage of this printer is that in its quietest and quietest than most of the daisywheels currently on offer at under £500 plus it already has a tractor-feed unit which you will find is an optional extra with daisywheels.

In addition to these two basic print modes, the Canon PW-1080A also offers the dot graphics for image printing and a 1K input buffer which releases your computer earlier from the printing task. Another feature

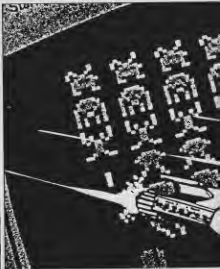
you think again and have a look at the Canon PW-1080A.

**Price:** £349.95 (shop around though)

**Manufacturer:** Canon UK Ltd

**Address:** Canon House, Major Road, Wokingham, Surrey RG40 3AL





There is a full set of instructions included in the cassette.

7/11/11 11:11 AM

1. **Introduction**  
 2. **Background**  
 3. **Methodology**  
 4. **Results**  
 5. **Conclusion**

[illegible][illegible]

[illegible][illegible]

```

1000 LOCATE 11,5:PRINT"NOT READY";GOTO 1005
1010 LOCATE 14,40:PRINT"COMPLETE"
1020 LOCATE 11,12:PRINT"REPELLING";GOTO 10
1030 END
1040 FOR T=1 TO 100:STEP 10:LOCATE 4,10:PRINT"
1050 FOR T=500 TO 510:STEP 10:LOCATE 4,10:PRINT"
1060 LOCATE 11,5:PRINT"NOT READY";GOTO 1000
1070 LOCATE 14,40:PRINT"COMPLETE"
1080 FOR T=1 TO 100:STEP 10:LOCATE 4,10:PRINT"
1090 LOCATE 11,5:PRINT"REPELLING";GOTO 1000
1100 LOCATE 14,40:PRINT"COMPLETE"
1110 END
1120 END
1130 END
1140 FOR T=1 TO 100:STEP 10:LOCATE 4,10:PRINT"
1150 LOCATE 11,5:PRINT"REPELLING";GOTO 1000
1160 LOCATE 14,40:PRINT"COMPLETE"
1170 END
1180 LOCATE 11,5:PRINT"NOT READY";GOTO 1000
1190 LOCATE 14,40:PRINT"COMPLETE"
1200 FOR T=1 TO 100:STEP 10:LOCATE 4,10:PRINT"
1210 LOCATE 11,5:PRINT"REPELLING";GOTO 1000
1220 LOCATE 14,40:PRINT"COMPLETE"
1230 END
1240 LOCATE 11,5:PRINT"NOT READY";GOTO 1000
1250 LOCATE 14,40:PRINT"COMPLETE"
1260 FOR T=1 TO 100:STEP 10:LOCATE 4,10:PRINT"
1270 LOCATE 11,5:PRINT"REPELLING";GOTO 1000
1280 LOCATE 14,40:PRINT"COMPLETE"
1290 END
1300 LOCATE 11,5:PRINT"NOT READY";GOTO 1000
1310 LOCATE 14,40:PRINT"COMPLETE"
1320 FOR T=1 TO 100:STEP 10:LOCATE 4,10:PRINT"
1330 LOCATE 11,5:PRINT"REPELLING";GOTO 1000
1340 LOCATE 14,40:PRINT"COMPLETE"
1350 END
1360 LOCATE 11,5:PRINT"NOT READY";GOTO 1000
1370 LOCATE 14,40:PRINT"COMPLETE"
1380 FOR T=1 TO 100:STEP 10:LOCATE 4,10:PRINT"
1390 LOCATE 11,5:PRINT"REPELLING";GOTO 1000
1400 LOCATE 14,40:PRINT"COMPLETE"
1410 END
1420 LOCATE 11,5:PRINT"NOT READY";GOTO 1000
1430 LOCATE 14,40:PRINT"COMPLETE"
1440 FOR T=1 TO 100:STEP 10:LOCATE 4,10:PRINT"
1450 LOCATE 11,5:PRINT"REPELLING";GOTO 1000
1460 LOCATE 14,40:PRINT"COMPLETE"
1470 END
1480 LOCATE 11,5:PRINT"NOT READY";GOTO 1000
1490 LOCATE 14,40:PRINT"COMPLETE"
1500 FOR T=1 TO 100:STEP 10:LOCATE 4,10:PRINT"
1510 LOCATE 11,5:PRINT"REPELLING";GOTO 1000
1520 LOCATE 14,40:PRINT"COMPLETE"
1530 END
1540 LOCATE 11,5:PRINT"NOT READY";GOTO 1000
1550 LOCATE 14,40:PRINT"COMPLETE"
1560 FOR T=1 TO 100:STEP 10:LOCATE 4,10:PRINT"
1570 LOCATE 11,5:PRINT"REPELLING";GOTO 1000
1580 LOCATE 14,40:PRINT"COMPLETE"
1590 END
1600 LOCATE 11,5:PRINT"NOT READY";GOTO 1000
1610 LOCATE 14,40:PRINT"COMPLETE"
1620 FOR T=1 TO 100:STEP 10:LOCATE 4,10:PRINT"
1630 LOCATE 11,5:PRINT"REPELLING";GOTO 1000
1640 LOCATE 14,40:PRINT"COMPLETE"
1650 END
1660 LOCATE 11,5:PRINT"NOT READY";GOTO 1000
1670 LOCATE 14,40:PRINT"COMPLETE"
1680 FOR T=1 TO 100:STEP 10:LOCATE 4,10:PRINT"
1690 LOCATE 11,5:PRINT"REPELLING";GOTO 1000
1700 LOCATE 14,40:PRINT"COMPLETE"
1710 END
1720 LOCATE 11,5:PRINT"NOT READY";GOTO 1000
1730 LOCATE 14,40:PRINT"COMPLETE"
1740 FOR T=1 TO 100:STEP 10:LOCATE 4,10:PRINT"
1750 LOCATE 11,5:PRINT"REPELLING";GOTO 1000
1760 LOCATE 14,40:PRINT"COMPLETE"
1770 END
1780 LOCATE 11,5:PRINT"NOT READY";GOTO 1000
1790 LOCATE 14,40:PRINT"COMPLETE"
1800 FOR T=1 TO 100:STEP 10:LOCATE 4,10:PRINT"
1810 LOCATE 11,5:PRINT"REPELLING";GOTO 1000
1820 LOCATE 14,40:PRINT"COMPLETE"
1830 END
1840 LOCATE 11,5:PRINT"NOT READY";GOTO 1000
1850 LOCATE 14,40:PRINT"COMPLETE"
1860 FOR T=1 TO 100:STEP 10:LOCATE 4,10:PRINT"
1870 LOCATE 11,5:PRINT"REPELLING";GOTO 1000
1880 LOCATE 14,40:PRINT"COMPLETE"
1890 END
1900 LOCATE 11,5:PRINT"NOT READY";GOTO 1000
1910 LOCATE 14,40:PRINT"COMPLETE"
1920 FOR T=1 TO 100:STEP 10:LOCATE 4,10:PRINT"
1930 LOCATE 11,5:PRINT"REPELLING";GOTO 1000
1940 LOCATE 14,40:PRINT"COMPLETE"
1950 END
1960 LOCATE 11,5:PRINT"NOT READY";GOTO 1000
1970 LOCATE 14,40:PRINT"COMPLETE"
1980 FOR T=1 TO 100:STEP 10:LOCATE 4,10:PRINT"
1990 LOCATE 11,5:PRINT"REPELLING";GOTO 1000
2000 LOCATE 14,40:PRINT"COMPLETE"

```

[illegible]









```

147000LGR1
14800PRINTAB15,51"***** HELICOPTER *****
14900PRINTAB15,51"The city is being attacked
    by aliens....."
1500PRINTAB15,51"your helicopter is out of
    fuel....."
1510PRINTAB15,150"The only way to stop them
    is to reach the next difficulty
    level....."
152000LGR2
1530PRINTAB15,51"RADIO NEWS"
1540PRINTAB15,51"12-15pm
    1550PRINTAB15,51"15-18pm
    1560PRINTAB15,51"18-21pm
    1570PRINTAB15,51"21-24pm
    1580PRINTAB15,51"24-27pm
    1590PRINTAB15,51"27-30pm
    1600PRINTAB15,51"30-33pm
    1610PRINTAB15,51"33-36pm
    1620PRINTAB15,51"36-39pm
    1630PRINTAB15,51"39-42pm
    1640PRINTAB15,51"42-45pm
    1650PRINTAB15,51"45-48pm
    1660PRINTAB15,51"48-51pm
    1670PRINTAB15,51"51-54pm
    1680PRINTAB15,51"54-57pm
    1690PRINTAB15,51"57-60pm
    1700PRINTAB15,51"60-63pm
    1710PRINTAB15,51"63-66pm
    1720PRINTAB15,51"66-69pm
    1730PRINTAB15,51"69-72pm
    1740PRINTAB15,51"72-75pm
    1750PRINTAB15,51"75-78pm
    1760PRINTAB15,51"78-81pm
    1770PRINTAB15,51"81-84pm
    1780PRINTAB15,51"84-87pm
    1790PRINTAB15,51"87-90pm
    1800PRINTAB15,51"90-93pm
    1810PRINTAB15,51"93-96pm
    1820PRINTAB15,51"96-99pm
    1830PRINTAB15,51"99-102pm
    1840PRINTAB15,51"102-105pm
    1850PRINTAB15,51"105-108pm
    1860PRINTAB15,51"108-111pm
    1870PRINTAB15,51"111-114pm
    1880PRINTAB15,51"114-117pm
    1890PRINTAB15,51"117-120pm
    1900PRINTAB15,51"120-123pm
    1910PRINTAB15,51"123-126pm
    1920PRINTAB15,51"126-129pm
    1930PRINTAB15,51"129-132pm
    1940PRINTAB15,51"132-135pm
    1950PRINTAB15,51"135-138pm
    1960PRINTAB15,51"138-141pm
    1970PRINTAB15,51"141-144pm
    1980PRINTAB15,51"144-147pm
    1990PRINTAB15,51"147-150pm
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    2010PRINTAB15,51"153-156pm
    2020PRINTAB15,51"156-159pm
    2030PRINTAB15,51"159-162pm
    2040PRINTAB15,51"162-165pm
    2050PRINTAB15,51"165-168pm
    2060PRINTAB15,51"168-171pm
    2070PRINTAB15,51"171-174pm
    2080PRINTAB15,51"174-177pm
    2090PRINTAB15,51"177-180pm
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    2110PRINTAB15,51"183-186pm
    2120PRINTAB15,51"186-189pm
    2130PRINTAB15,51"189-192pm
    2140PRINTAB15,51"192-195pm
    2150PRINTAB15,51"195-198pm
    2160PRINTAB15,51"198-201pm
    2170PRINTAB15,51"201-204pm
    2180PRINTAB15,51"204-207pm
    2190PRINTAB15,51"207-210pm
    2200PRINTAB15,51"210-213pm
    2210PRINTAB15,51"213-216pm
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    6460PRINTAB15,51"1493-1496pm
    6470PRINTAB15,51"1496-1499pm
    6480PRINTAB15,51"1500-1503pm
    6490PRINTAB15,51"1503-1506pm
    6500PRINTAB15,51"1506-1509pm
    6510PRINTAB15,51"1509-1512pm
    6520PRINTAB15,51"1512-1515pm
    6530PRINTAB15,51"1515-1518pm
    6540PRINTAB15,51"1518-1521pm
    6550PRINTAB15,51"1521-1524pm
    6560PRINTAB15,51"1524-1527pm
    6570PRINTAB15,51"1527-1530pm
    6580PRINTAB15,51"1530-1533pm
    6590PRINTAB15,51"1533-1536pm
    6600PRINTAB15,51"1536-1539pm
    6610PRINTAB15,51"1539-1542pm
    6620PRINTAB15,51"1542-1545pm
    6630PRINTAB15,51"1545-1548pm
    6640PRINTAB15,51"1548-1551pm
    6650PRINTAB15,51"1551-1554pm
    6660PRINTAB15,51"1554-1557pm
    6670PRINTAB15,51"1557-1560pm
    6680PRINTAB15,51"1560-1563pm
    6690PRINTAB15,51"1563-1566pm
   
```

# SWITCHBOARD

*In this game you take the part of a harassed switchboard operator trying to connect hundreds of callers to the right extensions.*  
By Andrew Bird

If you've ever worked as a busy office then the nightmare of a game may not be familiar to you, but it's well worth trying.

The idea is to answer the lines of a switchboard before you become overloaded with phone calls. This is achieved by pressing the letters in order and at a time, thus connecting them.

## How it works

95-100 set up arrays  
100-200 show phone  
200-300 ask for call level  
300-400 print letters  
400-500 check for key pressed  
500-600 check for matching  
600-700 lines of part  
700-800 telephone ringing  
800-900  
1000-1099 end of game event  
1000-1099 end of game (kill)  
1000-1099 instructions

## Variables

DEM a, DEM y letters  
nls, nms letters up and down  
a, d call level  
b, c down a line between letters  
npl, npr clock for part of  
switchboard printed line  
m, n seconds time elapsed  
npl, npr phone calls during game  
phone used to trigger phone  
call routine  
key, CODE if key pressed  
i, nms for letter loop  
L, nms for number loop  
d, nms for

```

1 REM SWITCHBOARD 1988
2 REM By Andrew Bird
3 GO SUB 1000
4 CLS : PRINT AT 10,10,"PLEASE WAIT"
5 RANDOMISE
6 POKE 23407,500 POKE 23408,8
7 REM Set up Arrays
8 REM y123,214 500 y123,21
9 POKE 4+1 TO 13
10 LET a14,21:PRINT DEMDEM13+40
11 FOR n=1 TO 4-1
12 IF a14,21=DEMDEM13 THEN GO TO 30
13 NEXT n: NEXT 4
14 FOR n=1 TO 13
15 LET y14,21:PRINT DEMDEM13+30
16 FOR n=1 TO 4-1
17 IF y14,21=DEMDEM13 THEN GO TO 40
18 NEXT n: NEXT 4
19 FOR n=1 TO 13
20 LET x14,21=DEMDEM13 THEN GO TO 50
21 NEXT n: NEXT 4
22 FOR n=1 TO 13
23 LET n=DEMDEM13+40
24 FOR n=1 TO 4-1 IF x14,21=DEMDEM13 THEN GO TO 7
25 NEXT n
26 LET a14,21=DEMDEM13
27 NEXT 4
28 FOR n=1 TO 13
29 LET y14,21,21+4
30 NEXT 4
31 REM Screen & Bell Javel
32 SCREEN 0: PAPER 0: INC DE CLS
33 FOR n=1 TO 170: PRINT 4-100,4: GOTO 400
340 NEXT 4
35 FOR n=1 TO 10: PRINT AT 4,0, PAPER 0:
36 NEXT 4
37 FOR n=1 TO 4: PRINT 4-10,4: GOTO 210-14
38 NEXT 4
39 FOR n=1 TO 10: PRINT AT 4,0, PAPER 0:
40 NEXT 4
410 PRINT 10,40: DEMDEM14,50,11 DEMDEM14,50,11
420 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
430 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
440 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
450 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
460 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
470 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
480 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
490 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
500 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
510 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
520 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
530 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
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570 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
580 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
590 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
600 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
610 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
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670 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
680 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
690 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
700 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
710 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
720 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
730 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
740 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
750 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
760 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
770 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
780 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
790 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
800 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
810 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
820 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
830 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
840 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
850 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
860 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
870 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
880 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
890 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
900 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
910 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
920 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
930 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
940 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
950 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
960 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
970 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
980 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11
990 PRINT 10,50,11 DEMDEM14,50,11 DEMDEM14,50,11

```









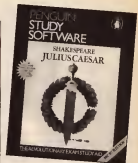
**Home Sweet Home**  
is John Henderson's  
theme this week —  
Is home software  
worth buying and  
does it help or  
hinder?

**L**ate after school — how can the home computer help children with their learning? There is only really one answer — by using quality software along the lines used by the schools themselves. Talking to teachers will, however, present parents with a wide range of differing ideas. This week it is time for an examination — no, not the things that everyone hates. An examination of educational software produced for the BBC computer at home, guaranteed not to upset even lay-farmer colleagues! The basic question — is home educational software all it seems?

An most homes will rely on cassette loading, but look at an extra package. Using your computer is published by the BBC, an interesting and comprehensive work. The technique used in this package is Computer Synthesised Audio (CSA). In essence, it comes — after all it is a complete introduction to what computers are capable of — CSA enables children to understand what is happening on the computer screen by following instructions given to them on an audio cassette. Yes, you do need to own two cassette recorders.

Classes are contained in an eight-oz card pack, with voice tapes and software tapes clearly labelled and colour-coded! There's even a supply of sticky labels to label each cassette player according to its function. A 40 page instruction booklet contains the main aims of each set of programs, together with a transcript of each voice programme. The four programs cover a general introduction to computer graphics and score positions, a look at the tasks performed by computers, an introduction to BASIC functions, and a history of computing.

Full and clear instructions are provided to transfer the software to disc. The package



will run on BASIC1 and BASIC2 machines. The packaging is substantial enough to live up to life at home and parents are easily removed from their plastic tray — no need for the usual primary assessment at all.

On the face of it, a good introductory package to complement the Welcome tape supplied with the BBC computer. Damage that much emphasis is placed on BASIC as a programming language in the first primary schools, the audience to which this is aimed, learning BASIC forms an part of computer work. The effect of one also under this pack — the latter loading sessions seem to show how computers can be used, while really it is part of the history.

The set of programs were originally available as part of regular broadcasts to schools, at a cost of £12. Why then has the price doubled for the home market? The disc voice tapes are included but this is irrelevant as no wires. A new set of video programmes in this series are due to be broadcast to schools later this year. They may eventually appear on the home front — if you can afford them.

Another re-mastered package is *Please Logic* from Addison-Wesley (Hemel Hempstead). This originally came to schools as Logic Challenge. I prefer the new title as this is not a logic in-

plementation but a series of problem packages. It has one thing in common with *Using the Computer* — a price increase, this time to £12.99. Supplied on disc or cassette, *Please Logic* allows children to explore a problem world by using some of the commands to overcome the exercises and challenges divided in the documentation. Full instructions are provided in a well presented 40 page challenge book and the 16 page user manual.

Such a pity that so much looks like a typical textbook instead of a new adventure with shape. An answer file is also supplied to persuade the right/wrong answers. Graphic parts to be marked out of ten is not one!

Perhaps are drawn with yellow lines on a blue background. Quite sophisticated designs are possible using REPEAT loops. Children are already using similar software in the classroom, so why buy that for home? Well the potential for further learning sometimes relies on familiarity with the resource. Take your time with *Please Logic* and continue the learning. There are however, some disadvantages.

Some commands are given different names in those used on packages most popular at schools eg. DEFINE for label, say procedures. A major problem, especially for younger

# EDUCATION

user, is the orientation of the drawing arrow. Most start with the arrow pointing North, in Picture Logic the arrow faces to the East. This may seem trivial, but children are often confused when relating words to actual directions.

Parents not commonly found in graphics packages are WHERE, to map the exact position of the arrow on the screen, and SETX and SETY coordinates to set the pen in any position. The editor presents a line by line screen of the procedure's complete with a screen display showing what functions each line has. A screen dump program is available on the disc.

This is a useful, if expensive, package that could provide many hours of valuable experience. Parents should, however, check to see if similar software is available for children at school.

Acornsoft Home Education seems well set to be just the thing for parents to look at.

Our package in this category is *Speedy Mizar*, the old fashioned house and attempt to cure learning difficulties, but no substitute with a difference. In an attempt to counter house developments, this program allows the choice of keyboard or microphone input. Following the title page and a short tour of all speech rooms to help set the scene, a menu page allows the user a choice of input device and a sound on/off option. Access to the menu is via the escape key at all times. Users may return to the menu during a game, when the option can be used again or to continue.

A game for up to 4 players, *Speedy Mizar* deals in real interaction between the players. Screens for the program are split into four parts, one for each player showing their position in the house and personal score. Instructions will be rendered from your position, players can move characters to explore the house, picking up clues as they go. If you require the help of another player anything could be simpler, call them. Messages then change to each player window and the path the cooperative planning opens up. If you feel close to solving the mystery there is nothing to prevent you having more than one go at a time.

The game starts close to finished — players are kindly



provided with notes, but start in different rooms. Then a plan of the house needs to be built up as players explore in place or outside in the landscape, for clarity. The object is to collect in each room as possible before escaping, but beware of traps that go bump in the night. In fact the game instructs you — no tedious killing or mugging in this mode.

Although the packaging is poor, the booklet accompanying *Speedy Mizar* is very well written, listing some of the more every-day-type of commands and explaining the real educational value of the commercial learning environment. There's even the text of a sample game to read if you have problems. An excellent introduction to friendly edutronics for all the family. Worth noting the 6 months loading time on the cassette version for

the hours of fun to follow.

How to move on to thinking of exams — yes, this is the time to think about the options available. In our view some students taking English Literature papers will already have the same of the book-club will have no choice. Recently in *Things Fall Apart*, Ben told the world a sensible approach to learning the manual. Look no further than the *PCWORLD STUDY SOFTWARE* series of courses. With titles covering plays by Shakespeare this software is amongst the best around.

After loading the screen presents the user with a list of characters, scenes and themes like the arrow keys to move around the selection of choice. Pressing one key (P for PICK) enables a character or theme to be chosen for a search of the file. Several choices can be

made or deleted from the list. References can be made to specific bits in the whole play. Pressing a button the search and further text is presented to direct thoughts towards the answer. Discover the links between Romeo and the Court, more text and then the plotline of the text. There's also a section entitled "The further connections" to help in the plot finally in the mind. Both adults and older children will enjoy using these packages and a real appreciation of Shakespeare begins to emerge.

An introduction to computing, an adventure game, a graphics pack and a revision aid. The programs discussed look in four very different areas of computers in education. What parents have emerged? Well, there's the typical, where content is more in price for the home market, followed by revision software that does the computer as the rule of the day, as a majority of children. The choice is up to individuals. Parents should not be level-headed in selection or being over-ambitious. There are so many signs over which to fall that in the next article will be a series of lists of software to look for when choosing educational software.

**Programs detailed:**  
**Using your Computer**  
BBC Software  
BBC B  
£29.95

**Picture Logic**  
Addison Wesley Hornsby  
BBC B  
£12.15

**Speedy Mizar**  
Acornsoft Home Education  
BBC B  
£9.95

**Program Study Software**  
includes  
Romeo and Juliet  
John Constant  
Macbeth  
Henry IV Part I  
Twelfth Night  
Merchant of Venice  
£7.95 + VAT  
Also available for the  
Spectrum, Commodore &  
Electron.







I am writing this letter to you because I had problems when I typed in your Commodore program in 80C'W 113.

After I had typed the game in, it wouldn't run. There was a problem. First messages at line 316, 336, 350 and 340 kept appearing in the main text, when the file was walked into from the program stopped and I got a message about incorrect statements in 500.

To solve this I took out the offending lines and now the program works great. All 80C'W letters for the TI are gone and I would give 10 out of 10 for each one.

Alan Bayle, Atlanta



### Question of balance

I felt I had to write in answer to S.G. Young, Chicago, in issue 117, in which he stated that your magazine should be altered.

I feel the magazine is a weekly in fact and not weekly with all types of computers. I was an Amstrad 484 and 584 suggestion that the games being are a waste of editorial space quite frankly shocked me. I am a learner and it is only by making in all the things that I find I am comfortable from the games and utilities work.

I have four grandchildren and although for me that the letters are "not too easy" they have been difficult with many years I have managed to type and have succeeded in running.

I am no longer fit to work and being told you want a pleasure like have and at the same time make their children very happy. It would be impossible for me to make them with enough children because of the price the manufacturers are asking.

My suggestion to replace the letter with a "Commodore" is, in my book, foolish. I am the expert of providing a comfortable game and does not wish to make it more fun to find it. It is the best idea of buying it in the first place.

Please keep your magazine as well informed as it is so I believe you do by be able to imagine.

J. McCloskey from Deepwood

### Leave the lists alone

I was very unhappy to read S.G. Young's comment in 80C'W 117 that in his opinion the biggest drawback with 80C'W is the games listings and he saw the games listings as a waste of precious editorial space, "as they take completely in comparison with more of the commercially available programs."

Please don't, Sir I am a chap who gets enjoyment from your games listings, although there are not often many. I am not complaining because your mag is worth double the price. I am a 60-year old disabled person with an Amstrad who really gets a very great deal of pleasure from doing your listings of games and my friends and nephews who enjoy playing them.

So why doesn't S.G. Young BLIN, PERK or GOTO at another venue and let me and hundreds like me will get great happiness from reading your mag exactly as it is. No please keep it up and many thanks for a list that mag with a third class price.

Don Powell, Dagenham

It rather looks as though S.G. Young is out of control. We had a number of other letters about the inclusion of games listings too, and all wanted them to stay.

We are always looking for good quality games and utility listings and use a fair number of readers' suggestions each year. Please keep sending them in. We have no reject a number but that is to keep the quality up to 80C'W's high standard. P.S. We even pay for those we publish!

### Time for a train-in?

With computers now owned by a great deal of homes these obviously cannot be done when your monthly bills added and a better option seems on the market.

My son Gid is keen up for an upgrade to a C64 and I do so I will have to sell my 486 — about that through the sale is a computer magazine or the local paper.

In the mean time, Spectrums, 8088 and other domestic systems may feel the need to upgrade, whether to a better version of their old computer or to a completely different one. The problem is that, if you had a video, 8088 or TV, you could just likely get a train-in at a shop.

Unfortunately as yet widespread facilities for computer train-ins are unavailable and it seems each I pay for a market which has always been in fact working.

Maybe one day Microsoft, Apple, Olivetti and all the others will see the need for a service. Let us hope that it won't be a long time coming.

A Clarke, Warwick

### More Amstrad Wizards — please

I own a C1240 and am very very pleased with it. Now that I am becoming interested in modems I have been looking through all the magazines to see if there are any which have been reviewed that I could only find two modems being sold in packages. One is from Computer Publications and the other is from KDS Electronics in Norfolk.

Please could you review these two packages. I'm sure there are a lot of Amstrad owners who want to buy a modem but are just waiting to see a couple of them reviewed. Please don't disappoint us Amstrad users!

B. Bennett, Colliers Wood London

Thanks for the idea, we will contact the companies concerned and see what we can do.

We are planning a feature on modems for the future to look out for that too.

Home Computing Weekly  
c/o Letter Support  
London W1R 3AB



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## Reader's Hi-score table

Name	Class	Machine	Score
Jacobson Dale	Shirley's Chessmate	VIC-20	81,480
	The Ph Metamorphosis	VIC-20	1,087,426
		VIC-20	3,600
		VIC-20	17,600

### Whoever next

Three rather strange-looking collections of numbers but there is a sensible answer to each one (or our question — whoever does?)

All three, by the way, are linked by a common theme

61 21 82 43 03 64 ?

$\frac{7}{1}$   $\frac{4}{2}$   $\frac{1}{3}$   $\frac{6}{3}$   $\frac{5}{4}$   $\frac{2}{4}$   $\frac{3}{5}$   $\frac{5}{6}$  ?

61 42 23 04 84 55 46 ?

### Solution to last weekly puzzle

1 BRACES 2 BINGO 3 INSERT 4 CURARE 5 SUPREMACY 6 TRAILS

### Dragon tales

Jan Van Sluis has sent us three games tips for Dragon II.

In Dragon Room, if you press "C" after a go there you can where you left off. For Magic Maze we say never press "P" and the game will pause. Type commands and a book will appear on the bottom right of the screen. Press ENTER and the game will pause, type the "A" for the central corridor and "Y" for the left room.

Are you looking for a computer you intend to work in bits at 11, Herts Rd, Little Smeeth South West Loth 100.



### Stuff about

How are a few tips from the Lord's on the Staff of Karnath for the CM.

In the dungeon there is a red skull in the wall. This has a maze of the passage behind it. To get it, go into the small room where there are two doors. Touch the wall between the two middle doors and heavy book to the red skull which should be up in the air, but heavy book it doesn't stay up for long.

To get the power of the sword, go into the library room go into the upper passage where there is a book. Shoot the sword in the middle with the Thudra spell and, when there is a strong sound, press a key once and shoot with the spell. A cross will fall off onto the floor. Collect it and you may get into the library room.

In the giant hall shoot the bones with the Archa spell and quickly pick up the sword.

## Thomas Television Dorchester Micromat 800 Crossword Competition Week Three

Clue 3

Pari A

"Compani ago in the water swelled,

The Holly Gnat lay in the Choker Wall,

From Joseph's wall shoves down for a rat,

Draws the thorn bush,

Flowing in water from,

Where a wounded lion, carried by an black eld knight,

Was taken to die on his tide, a Tor of great height."

Pari B

"Experience, though some encounter

Were in this world, is right people for me

To gather all we can in to meetings,

For, lastings, with I needed you was off apt,

Thousand for find that is more on time,

Blackboard in church does I have had five,

If I on off might have combined here,

And all were worthy men of her degree."

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100,000 pages in your fingertips! Joining Micromat brings you British Telecom's full range of Prestel services.

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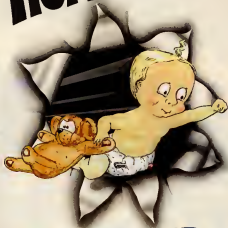
Specific Information: Computer business/health bulletin, farming, education and medical services keep your finger on the pulse.

Interactions: Homebanking, hotel and holiday bookings. Database and computers are convenient and interesting.

Find out more now.

# READERS PAGE

# Herbert's



## Dummy Run

*Trouble In Store for Herbert*

Spectrum 48K £9.95

Commodore 64 £9.95

Amstrad CPC 464 £9.95



### MIKRO-GEN

44 The Broadway, Bocking, Essex. 0344 427317

# JUMP JET

**CBM 64**  
**CASSETTE** £9.95  
**DISK** £11.95



Every pilot has the dream of flying one of these unusual and complex fighting machines. Here is your chance to do what few pilots have the privilege to try.

Depending on your skill, confidence and courage, you have the choice of remaining near the landing pad, learning to hover and land, or venturing higher to practise your approaches. When you think you have mastered these, then accelerate the Jump Jet into an attack fighter. Use the radar and range finder to seek and destroy the enemy, try launching heat-seeking air-to-air missiles. General. His radar and missile systems are as good as yours. Fearless pursuit is advised, you must maintain a fuel level that will enable you to relocate and return to the aircraft carrier, executing the skills you have learned to achieve a successful landing.

You are now ready to proceed to the next skill level to face additional hazards, such as unpredictable swell and treacherous cross-winds.

If warned, this program is not a toy or game. You will need to co-ordinate your hands, eyes and mind to successfully complete each mission. Do not hope to achieve in a short time that which took the author three years to learn as a Jump Jet pilot, and over a year to record on this computer program.



Written by  
Vaughan Cox  
Jump Jet Pilot

## ANIROG